Attached hereto is a marked-up version of the changes made to the claims by the current Amendment. The attached page is captioned "**Version with Markings to Show Changes Made**".

Applicants' undersigned representative wishes to express his appreciation for the telephone discussion with the Examiner on December 11, 2002, at which time he sought clarification as to Paragraph 4 of the Examiner's Detailed Action.

Claims 1, 3-6, and 9 are rejected under 35 USC 103(a) as being unpatentable over newly-cited Gore (U.S. 6,417,248) in view of Takizawa et al (U.S. 5,623,294).

The cancellation of Claims 1, 3-6, and 9 obviates the rejection. For the record, Applicants hereby state that Gore (U.S. Patent 6,417,248) was commonly owned at the time the present invention was made.

Claims 1 and 3-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kashiwazaki et al (U.S. 5,640,187) in view of Mercurio et al (U.S. 4,023,977), Satake et al (U.S. 5,814,685), Takizawa et al (US. 5,623,294), and Thompson et al (U.S. 6,341,856).

The cancellation of Claims 1 and 3-9 obviates the rejection.

Claims 10 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kashiwazaki et al (U.S. 5,640,187) in view of Lawrence et al (U.S. 6,280,027) and Thompson et al (U.S. 6,341,856).

The references and the rejected claims are discussed in Applicants' prior Amendment filed June 26, 2002, and the remarks and arguments made therein obtain here as well.

The Examiner incorporates her arguments made in the previous Office Action dated February 26, 2002.

The ***two-part*** system of Applicants, namely, such a system of jetting two components, which react to form a polymer *in situ* on the print media, accomplishes several distinct purposes:

(1) cross-linking of the monomers is performed in place to form the polymer;

(2) topographical concerns of the print media surface;

(3) the solubility of the monomers (isocyanates and polyols) is much easier to achieve in the ink-jet ink than with the use of preformed polymers in the ink; and

(4) a variety of cross-linking monomers can be successively applied to the print sample.

These two aspects are now more fully discussed.

With regard to aspects (1) and (2): With polymerization occurring on the adhering surface of the media, the overall binding of the polymer is enhanced. That is, as polymerization occurs, the crystalline structure of the polymer adapts to the crevices, fissures, and overall shape and form of the surface of the print media, thereby efficiently confining the colorant between the polymer and the media. This enhances the fastness properties of the colorant to the media, particularly the water fastness and smudge proofing of the colorant on the media, compared to a preformed polymer dissolved in the ink. In situations where a preformed polymer or a polymer already present in the ink or applied to the surface by a different pen, what usually occurs is that the dissolved polymer does not adhere efficiently and completely cover the media surface. Thus, the performance of the preformed polymer is not as good as the one polymerized on the surface of the media. However, it is not obvious what monomers to use such that the *in situ* polymerization reaction proceeds rapidly and extensively enough so that the monomers actually react on the surface of the media as desired to form polymer, rather than uselessly penetrating into the media matrix and not reacting.

With respect to aspect (3): The addition of polymers to thermally-fired ink-jet inks has disadvantageous rheological and surface-active properties. The shear rate of extruding drops from the orifices of ink-jet pens is extremely large. High molecular weight species do not obey Newtonian flow when subjected to these shear forces and, as a general result, aberrations in drop weight and trajectory occurs with their use. It is a general rule of thumb for those experienced in this art that it is rare that a naturally occurring or synthetic polymer can perform well in the presence of these extrusion forces. Usually, if polymers are present in the ink, pen drop ejection performance is compromised and requires extensive redesign of the ink-jet firing chamber and orifice structures to accommodate these polymers in the ink. Additionally, the decap or crusting performance is adversely affected with high molecular weight species. Thus, if a preformed polymer is to be used in the ink, it must not deteriorate pen performance. This severely limits the number of useable polymers in ink-jet inks. Simple molecules on the other hand, such as monomer precursors for polymers, have much lower molecular weights and depart less from Newtonian flow. Their use precludes extensive and costly redesign of pens. Thus, it is highly desirable to use simple, low molecular weight compounds in ink-jet compositions.

With regard to aspect (4): From a marketing viewpoint, it would be advantageous to have several fixer pens to accomplish specialty fixing; that is, when the printed sample will

(a) be exposed to the environments of extensive humidity, (b) be exposed to extreme amounts of ambient office light or sunlight, or (c) be subject to repetitive abrasion. Thus, having on hand for the end-user several fixer pens containing several various monomers, that when polymerized on the media solve these fastness issues, is highly desirable.

Kashiwazaki et al is a ***one-part*** system (underprinting fixative containing particles and/or binder polymer) and thus it suffers from the disadvantages discussed above for jetting inks containing a polymer.

Lawrence et al is also a ***one-part*** system (mixture of an anionic, water-dispersible polyurethane and a hydrophilic polymer) and thus it suffers from the disadvantages discussed above for jetting inks containing a polymer.

Thompson et al is a printing process using reactive inks, using heat and pressure to activate the ink.

First, it is clear that the Examiner is impermissibly extracting bits and pieces from different references to cobble together a facsimile of Applicants' claims, without regard to the teachings of the references.

> "[t]he test for obviousness is not whether the features of one reference may be bodily incorporated into another reference. . . . Rather, we look to see whether combined teachings render the claimed subject matter obvious."

In re Wood, 202 USPQ 171, 174 (C.C.P.A. 1979).

The claim must be considered ***as a whole***. The inclusion of separate references in a rejection to represent each of the different features described in the claims of the application is a sign that the Examiner is attempting to piece together the claimed invention using the claims as a guide. That is, the Examiner is using Applicants' claims as an instruction manual to find the appropriate prior art that might render the claims obvious. In this process, the Examiner has lost sight as to the real issue: whether it would have been obvious to combine with references ***without*** having access to the instant application. As stated by the Federal Circuit,

> "although Graham v. John Deere Co. . . . requires that certain factual inquiries, among them the differences between the prior art and the claimed invention, be conducted to support a determination of the issue of obviousness, the actual determination of the issue requires an evaluation in the light of the findings in those inquiries of the obviousness of the claimed invention as whole, not merely the differences between the claimed invention and the prior art."

Lear Siegler, Inc. v. Aeroquip Corp., 221 USPQ 1025, 1033 (Fed. Cir. 1984).

Thus, it is not correct for the Examiner merely to focus on the differences between the prior art and the claimed invention, and then to state that the differences themselves or individually are obvious. The claimed invention ***as a whole*** is to be considered. Further, it is impermissible for the Examiner to use the application itself as the basis or reason for formulating the obviousness rejection. As the Federal Circuit has stated:

> "It is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious. This court has previously stated that '[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.'"

In re Fritch, 23 USPQ 2d 1780, 1783-84 (Fed. Cir. 1992)

Not only the claimed invention as a whole must be considered, but also the prior art as a whole must be considered. See, for example, *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 221 USPQ 481, 488 (Fed. Cir. 1984), in which the Court stated:

> "The '315 patent specifically stated that it disclosed and claimed a combination of features previously used in two separate devices. That fact alone is not fatal to patentability. The claimed invention must be considered as a whole, and the question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination."

Note also a decision by the Federal Circuit in *Akzo N.V. v. United States International Trade Commission*, 1 USPQ 2d 1241, 1246 (Fed. Cir. 1986), cert. denied, 482 U.S. 909 (1987), in which the Court stated:

> "[P]rior art references before the tribunal must be read as a whole and consideration must be given where the references diverge and teach away from the claimed invention. . . . Moreover, appellants cannot pick and choose among individual parts of assorted prior art references 'as a mosaic to recreate a facsimile of the claimed invention.'"

The foregoing case law is cited to remind the Examiner that the references ***as a whole*** must also be considered, even as the claimed invention ***as a whole*** must be considered. Applicants contend that the Examiner has ignored the teachings of the references as a whole in finding obviousness in Applicants' claimed invention. Specifically, the primary reference,

Kashiwazaki et al, discloses a ***one-part*** system, with the polymer contained in the ink. In direct contrast, Applicants' claims are directed to a ***two-part*** system, with one reactive component in the fixative and the other reactive component in the ink, where the two components react on the print media to form a polymer. None of the secondary references discloses or even remotely suggests using such two-part systems.

Reconsideration of the rejection of Claims 10 and 14-15 under 35 U.S.C. 103(a) as being unpatentable over Kashiwazaki et al in view of Lawrence et al and Thompson et al is respectfully requested.

Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kashiwazaki et al in view of Lawrence et al and Thompson et al as applied to Claims 10 and 14-15 above, and further in view of Kurabayashi et al (U.S. 5,985,975).

The references and the rejected claims are discussed in Applicants' prior Amendment filed June 26, 2002, and the remarks and arguments made therein obtain here as well.

The Examiner incorporates her arguments made in the previous Office Action dated February 26, 2002.

The arguments made above regarding Kashiwazkai et al, Lawrence et al, and Thompson et al obtain here as well. Kurabayashi et al add nothing to the combination to render Applicants' claims obvious.

Reconsideration of the rejection of Claims 11-13 under 35 U.S.C. 103(a) as being unpatentable over Kashiwazaki et al in view of Lawrence et al and Thompson et al and further in view of Kurabayashi et al is respectfully requested.

Claims 10 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kashiwazaki et al (U.S. 5,640,187) in view of Lawrence et al (U.S. 6,280,027) and Thompson et al (U.S. 6,341,856).

The references and the rejected claims are discussed in Applicants' prior Amendment filed June 26, 2002, and the remarks and arguments made therein obtain here as well.

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The arguments made above regarding Kashiwazaki et al, Lawrence et al, and Thompson et al obtain here as well. The fact that this is a slightly different ground of rejection is immaterial, in view of the fact that Kashiwazaki et al and Lawrence et al are directed to ***one-part*** systems and Thompson et al are silent on this.

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The references and the rejected claims are discussed in Applicants' prior Amendment filed June 26, 2002, and the remarks and arguments made therein obtain here as well.

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The arguments made above regarding Kashiwazkai et al, Lawrence et al, and Thompson et al obtain here as well. Kurabayashi et al add nothing to the combination to render Applicants' claims obvious. The fact that this is a slightly different ground of rejection is immaterial, in view of the fact that Kashiwazaki et al and Lawrence et al are directed to ***one-part*** systems and Thompson et al are silent on this.

Reconsideration of the rejection of Claims 11-13 under 35 U.S.C. 103(a) as being unpatentable over Kashiwazaki et al in view of Lawrence et al and Thompson et al and further in view of Kurabayashi et al is respectfully requested.

Applicants provide two new sets of claims herewith. The first set (Claims 16-21) is directed to a method of printing on a print media, including printing ink on the print media and printing a fixative on the print media, in either order, the method comprising:

(a) providing at least one cartridge containing at least one fixative, the fixative(s) including at least one first reactive component selected from the group consisting of isocyanates and epoxy-terminated oligomers in a vehicle;

(b) providing at least one cartridge containing at least one ink-jet ink, the ink-jet ink(s) including at least one second reactive component selected from the group consisting of polyols, polyvinyl alcohols, and base catalysts;

(c) in either order, printing the fixative(s) and the ink(s) on the print media; and

(d) allowing reaction to proceed between the first reactive component(s) and the second reactive component(s) on the print media to form a polymer, the polymer having a glass

transition temperature within a range of -50°C to +100°C and a melting temperature within a range of 30°C to 150°C to thereby fix the ink-jet ink(s) on the print media.

The second set of new claims (Claims 22-27) is directed to a combination of (a) at least one fixative, the fixative(s) including at least one first reactive component selected from the group consisting of iso-cyanates and epoxy-terminated oligomers in a vehicle; and (b) at least one ink-jet ink, the ink-jet ink(s) including at least one second reactive component selected from the group consisting of polyols, polyvinyl alcohols, and base catalysts, the fixative(s) and the ink-jet ink(s) reacting on a print media to form a polymer, the polymer having a glass transition temperature within a range of -50°C to +100°C and a melting temperature within a range of 30°C to 150°C to thereby fix the ink-jet ink(s) on the print media.

Applicants assert that the new Claims 16-27 are patentable over the references cited by the Examiner.

The foregoing amendments and arguments are submitted to place the application in condition for allowance. The Examiner is respectfully requested to take such action. If the Examiner has any questions, she is invited to contact the undersigned at the below-listed telephone number. HOWEVER, ALL WRITTEN COMMUNICATIONS SHOULD CONTINUE TO BE DIRECTED TO: IP ADMINISTRATION, LEGAL DEPARTMENT, M/S 35, HEWLETT-PACKARD COMPANY, P.O. BOX 272400, FORT COLLINS, CO 80527-2400.

Respectfully submitted,

December 24, 2002

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 1 and 3-9 have been canceled.

New Claims 16-27 have been added as follows:

--16. (New) A method for printing on a print media, including printing ink on said print media and printing a fixative on said print media, in either order, said method comprising:

(a) providing at least one cartridge containing at least one fixative, said at least one fixative including at least one first reactive component selected from the group consisting of iso-cyanates and epoxy-terminated oligomers in a vehicle;

(b) providing at least one cartridge containing at least one ink-jet ink, said at least one ink-jet ink including at least one second reactive component selected from the group consisting of polyols, polyvinyl alcohols, and base catalysts;

(c) in either order, printing said at least one fixative and said at least one ink on said print media; and

(d) allowing reaction to proceed between said at least one first reactive component and said at least one second reactive component on said print media to form a polymer, said polymer having a glass transition temperature within a range of -50°C to +100°C and a melting temperature within a range of 30°C to 150°C to thereby fix said at least one ink-jet ink on said print media.--

--17. (New) The method of Claim 16 wherein at least three color inks in three separate print cartridges are provided.--

--18. (New) The method of Claim 17 wherein said at least three color inks are cyan, yellow, and magenta.--

--19. (New) The method of Claim 17 wherein three color inks in three separate print cartridges and one black ink in a fourth separate print cartridge are provided.--

--20. (New) The method of Claim 16 wherein said monomer or oligomer has a concentration in said vehicle within a range of about 2 to 30 wt%.--

--21 (New). The method of Claim 16 wherein said concentration is within a range of 3 to 10 wt%.--

--22. (New) In combination, (a) at least one fixative, said at least one fixative including at least one first reactive component selected from the group consisting of iso-cyanates and epoxy-terminated oligomers in a vehicle; and (b) at least one ink-jet ink, said at least one ink-jet ink including at least one second reactive component selected from the group consisting of polyols, polyvinyl alcohols, and base catalysts, said at least one first reactive component and said at least one second reactive component reacting on a print media to form a polymer, said polymer having a glass transition temperature within a range of -50°C to +100°C and a melting temperature within a range of 30°C to 150°C to thereby fix said at least one ink-jet ink on said print media.--

--23. (New) The method of Claim 22 wherein at least three color inks in three separate print cartridges are provided.--

--24. (New) The method of Claim 23 wherein said at least three color inks are cyan, yellow, and magenta.--

--25. (New) The method of Claim 23 wherein three color inks in three separate print cartridges and one black ink in a fourth separate print cartridge are provided.--

--26. (New) The method of Claim 22 wherein said monomer or oligomer has a concentration in said vehicle within a range of about 2 to 30 wt%.--

--27. (New) The method of Claim 22 wherein said concentration is within a range of 3 to 10 wt%.--